EPA Update
Residential Groundwater and Vapor Intrusion Sampling

Wescoat Village & Former Orion Park Housing Areas (Army Reserve Regional Support Command)

MEW and NAS Moffett Field Superfund Sites
Mountain View and Moffett Field, CA

Community Meeting

April 15, 2013

Drinking Water at Moffett Field

- Municipal water is supplied by San Francisco Public Utilities Commission
- Majority drinking water from Hetch Hetchy Reservoir in the Sierra Nevada near Yosemite
- Information regarding drinking water available on NASA Ames website: *(http://environment.arc.nasa.gov/arc_water_rep/index.html*)
- Report of brown/yellow water coming from tap at Wescoat Housing Area in March 2013
- NASA recommends that lines in housing area be flushed annually
- For issues related to tap water or questions/concerns regarding the Wescoat Village housing area, contact Clark Pinnacle Family Housing:

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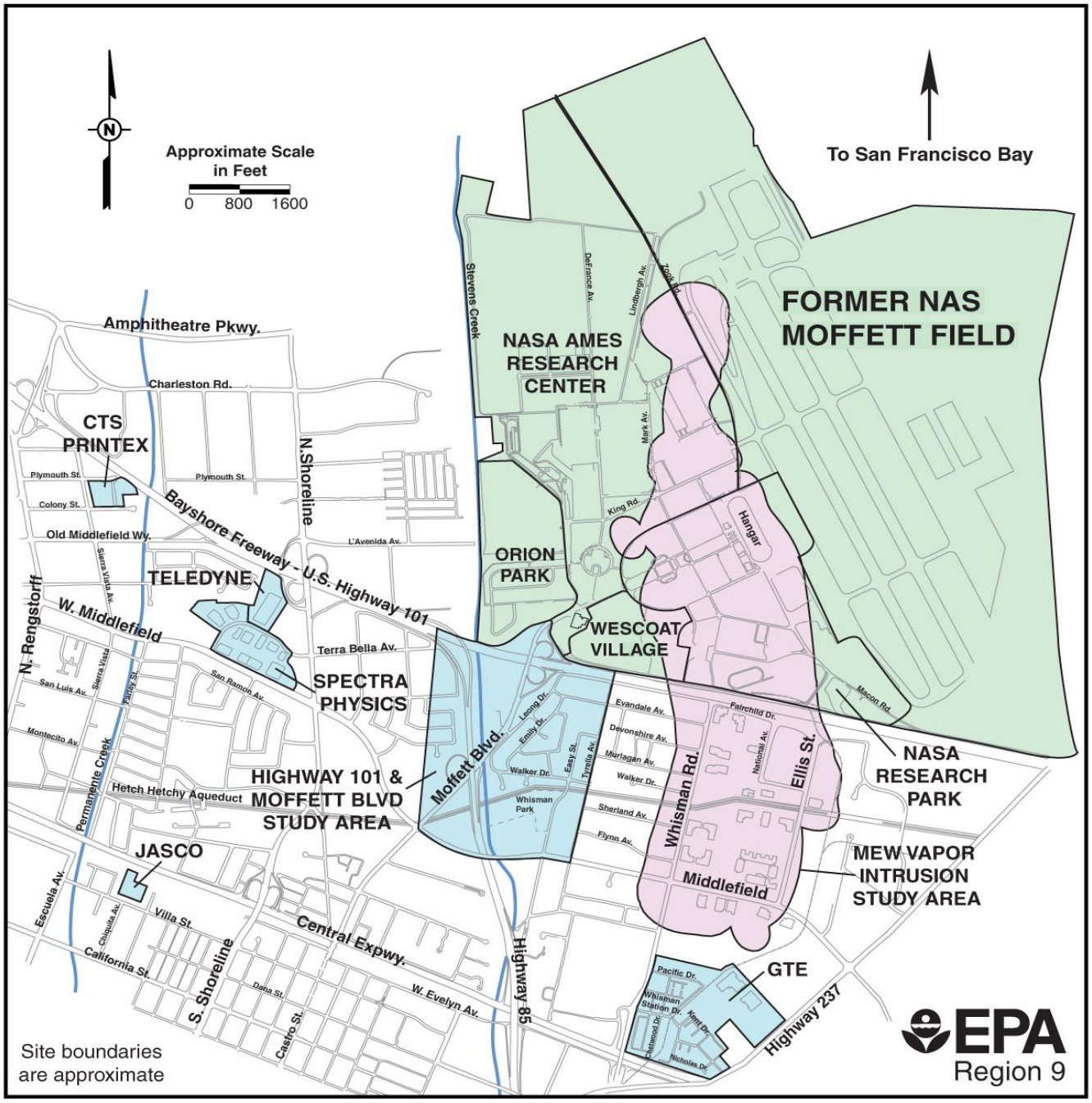
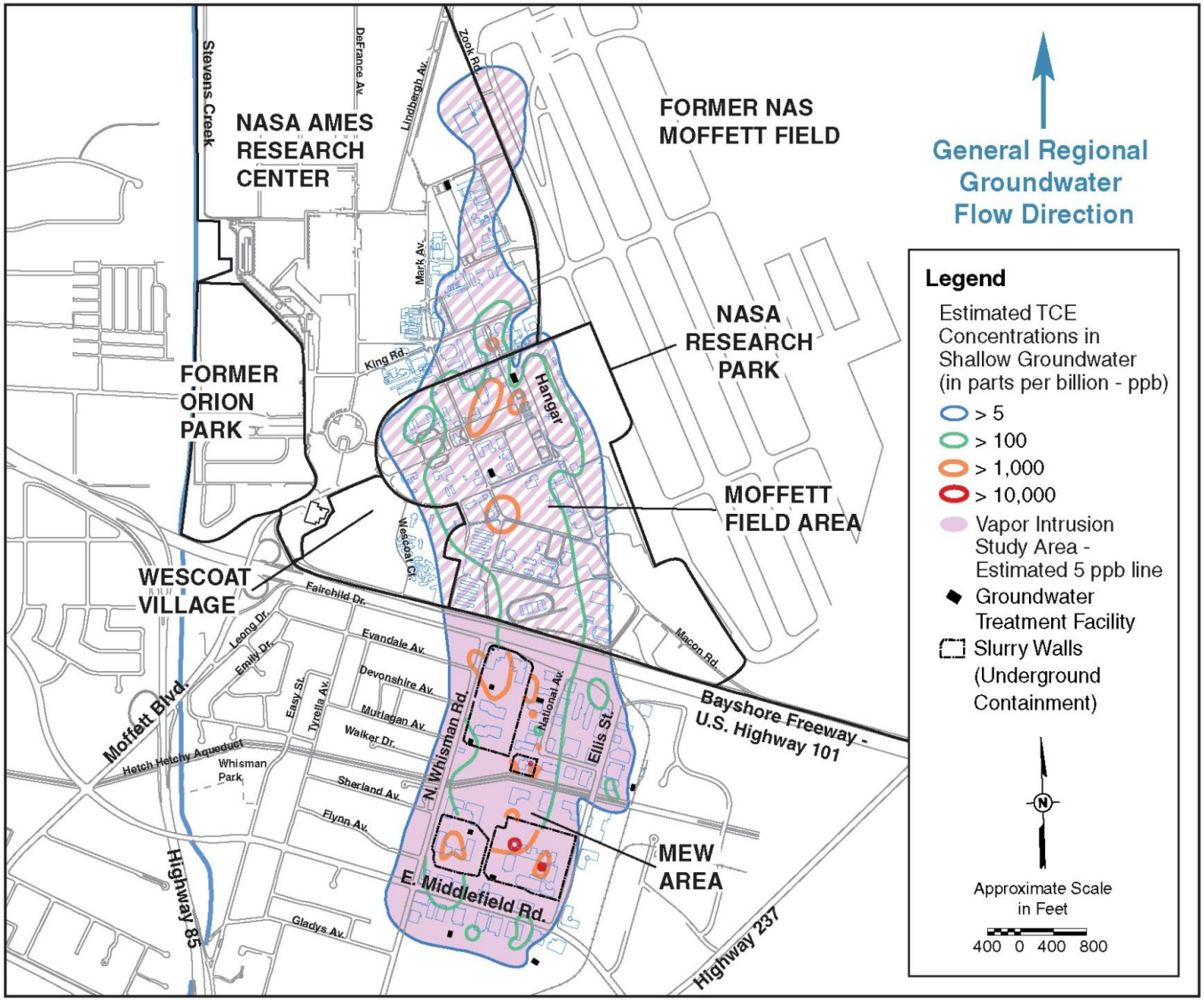
650.284.9009

Shawn Somerville, Vice-President
ssomerville@pinnaclefamily.com
831.644.0440

MEW SITE LOCATION AND VICINITY



Estimated Extent of Shallow TCE Groundwater Plume - 2009

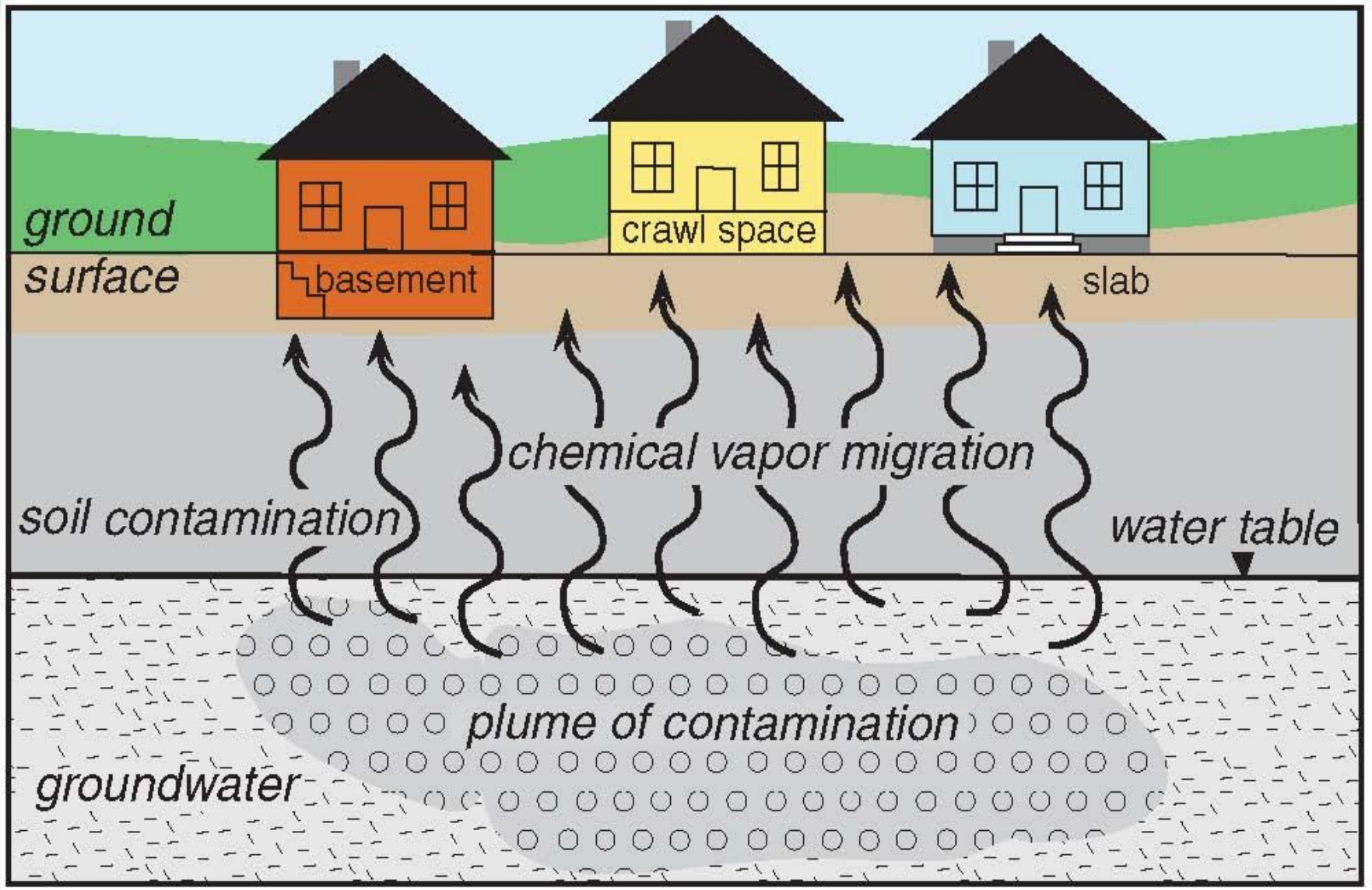


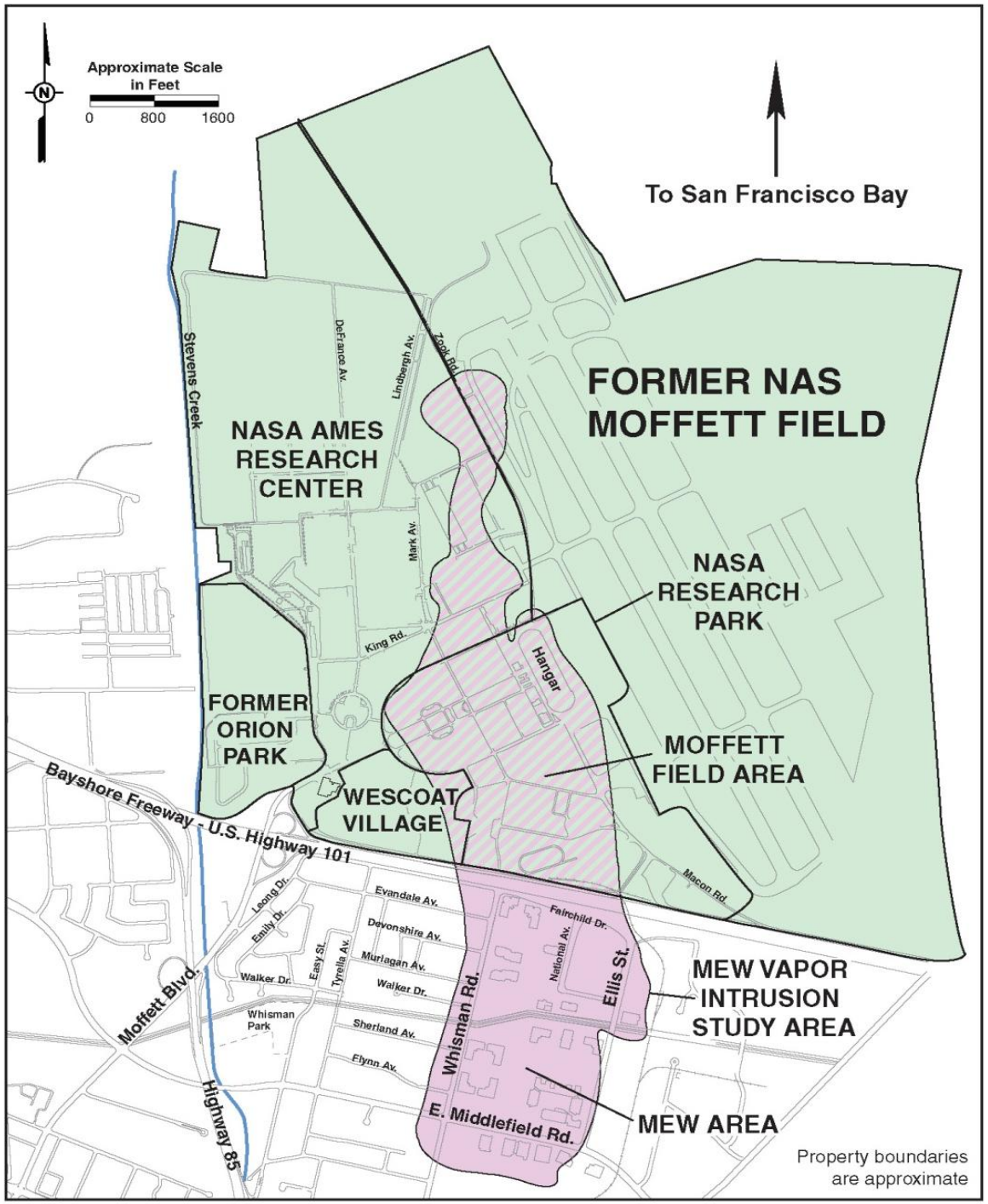
Groundwater Cleanup Progress

- Groundwater pump and treat to clean up and contain contamination. The TCE groundwater cleanup level is 5 micrograms per liter or parts per billion (ppb).
- Over 90 extraction wells pump approximately 500 gallons per minute (gpm) to 11 treatment systems.
- Over 5.25 billion gallons groundwater treated and over 100,000 pounds of TCE removed.
- Annual sampling of approximately 500 monitoring wells
- Semi-annual water level measurements of nearly 1000 wells.

Note: Groundwater in this area is not used for drinking water or other potable use.

Vapor Intrusion Pathway

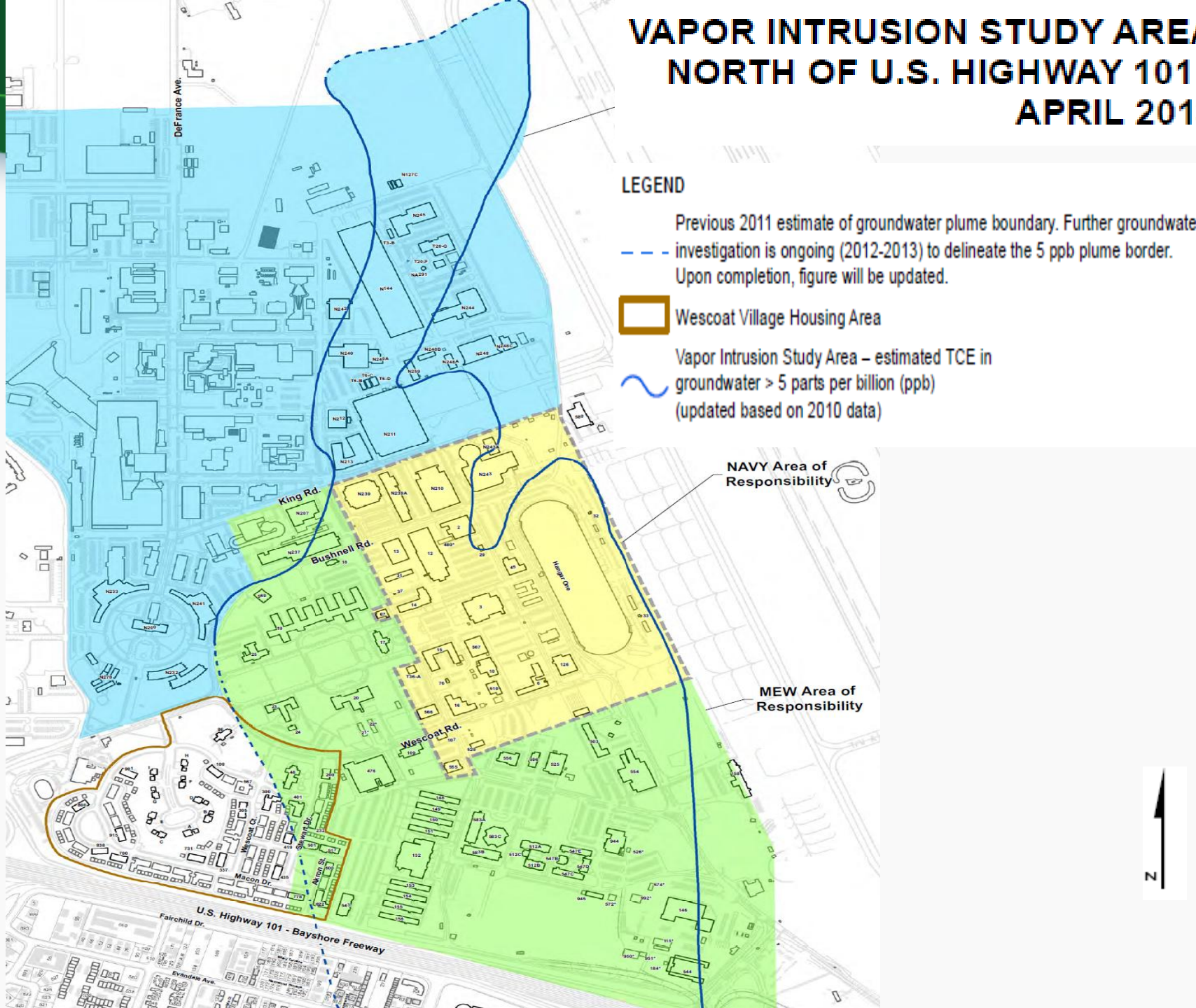



Approximate Scale in Feet
0
800
1600
To San Francisco Bay
FORMER NAS MOFFETT FIELD
NASA AMES RESEARCH CENTER
NASA RESEARCH PARK
MOFFETT FIELD AREA
FORMER ORION PARK
WESCOAT VILLAGE
MEW VAPOR INTRUSION STUDY AREA
MEW AREA
Stevens Creek
DeFrance Av.
Lindbergh Av.
Zook Rd.
Mark Av.
King Rd.
Hangar
Macon Rd.
Bayshore Freeway - U.S. Highway 101
Moffett Blvd.
Highway 85
Loong Dr.
Emily Dr.
Evandale Av.
Devonshire Av.
Muriagan Av.
Walker Dr.
Easy St.
Tyrella Av.
Whisman Park
Sherland Av.
Flynn Av.
Whisman Rd.
E. Middlefield Rd.
Fairchild Dr.
National Av.
Ellis St.
Property boundaries are approximate

MEW/Moffett Field Vapor Intrusion Study Area

- Generally defined by the area where TCE concentrations in shallow groundwater are greater than 5 micrograms per liter (ug/L), or parts per billion (ppb).
- In 2010, EPA selected a vapor intrusion remedy for the MEW Site, which applies to all existing and future residential and commercial buildings, within the MEW/Moffett Field Vapor Intrusion Study Area.

VAPOR INTRUSION STUDY AREA NORTH OF U.S. HIGHWAY 101 - APRIL 2013



New Construction – Wescoat Village Housing Area

- As a precautionary measure in 2006, Wescoat Village Housing was constructed with passive sub-slab vapor intrusion control systems to address any potential for vapor intrusion of TCE into the homes.
- Confirmation indoor air sampling in each building following construction prior to occupancy. All indoor air results below EPA's residential indoor air cleanup levels.

New Construction
Armed Forces Reserve Center

- Similarly, in 2010 to address potential vapor intrusion to indoor air from TCE in shallow groundwater, the Armed Forces Reserve Center buildings were constructed with active sub-slab vapor intrusion control systems.
- In addition, the Army recently sampled three existing buildings in the southern portion of the property (685-MEPS, 546, and 593-Navy Lodge).
- Army will be presenting the air sampling results and groundwater investigation work at the next Moffett Field Restoration Advisory Board (RAB) meeting on May 9, 2013.

What is TCE and why is it a concern?

- TCE or trichloroethene is a solvent used that was widely used in past for degreasing and cleaning.

- Can readily evaporate into air and has potential to migrate from shallow contaminated groundwater upwards into overlying buildings through the vapor intrusion pathway.

- If TCE is in indoor air at high enough levels for a long enough duration, it may pose a potential health concern.

2011 TCE Health Assessment

- In September 2011, EPA finalized TCE Health Assessment (see *Toxicological Review of TCE* http://www.epa.gov/iris/subst/0199.htm)

- Assessment concluded TCE is human carcinogen. Can cause cancer in humans if exposed to high enough concentrations for a long enough period of time.

- TCE can also affect the central nervous system, kidneys and liver, male reproductive organs, and the developing fetus.

Potential Health Effects of TCE Depend on Many Factors

Potential health effects of TCE depend on many factors including:

- General health, age and lifestyle of the person
- How much a person is exposed to TCE (amount, duration)
- How often a person is exposed (frequency of exposure)

INDOOR AIR STANDARD FOR TCE (MEW STUDY AREA)

Health-Based Criteria

- Protective of Cancer Effects
- Protective of Non-Cancer Effects
- Protective of both Short-Term and Long-Term Exposures

Margin of Safety

- Accounts for Sensitive Groups
- Data Gaps in the Science

Other Considerations

- Can be Reliably Measured using Current Laboratory Methods
- Typically Above "Background" TCE Levels Measured in Mountain View Air
- Two TCE Standards Account for Different Exposures that Occur in Homes vs. the Workplace

Residential Standard for TCE in Air = 1 $\mu g/m^3$
Worker Standard for TCE in Air = 5 $\mu g/m^3$

$\mu g/m^3$ = micrograms per cubic meter

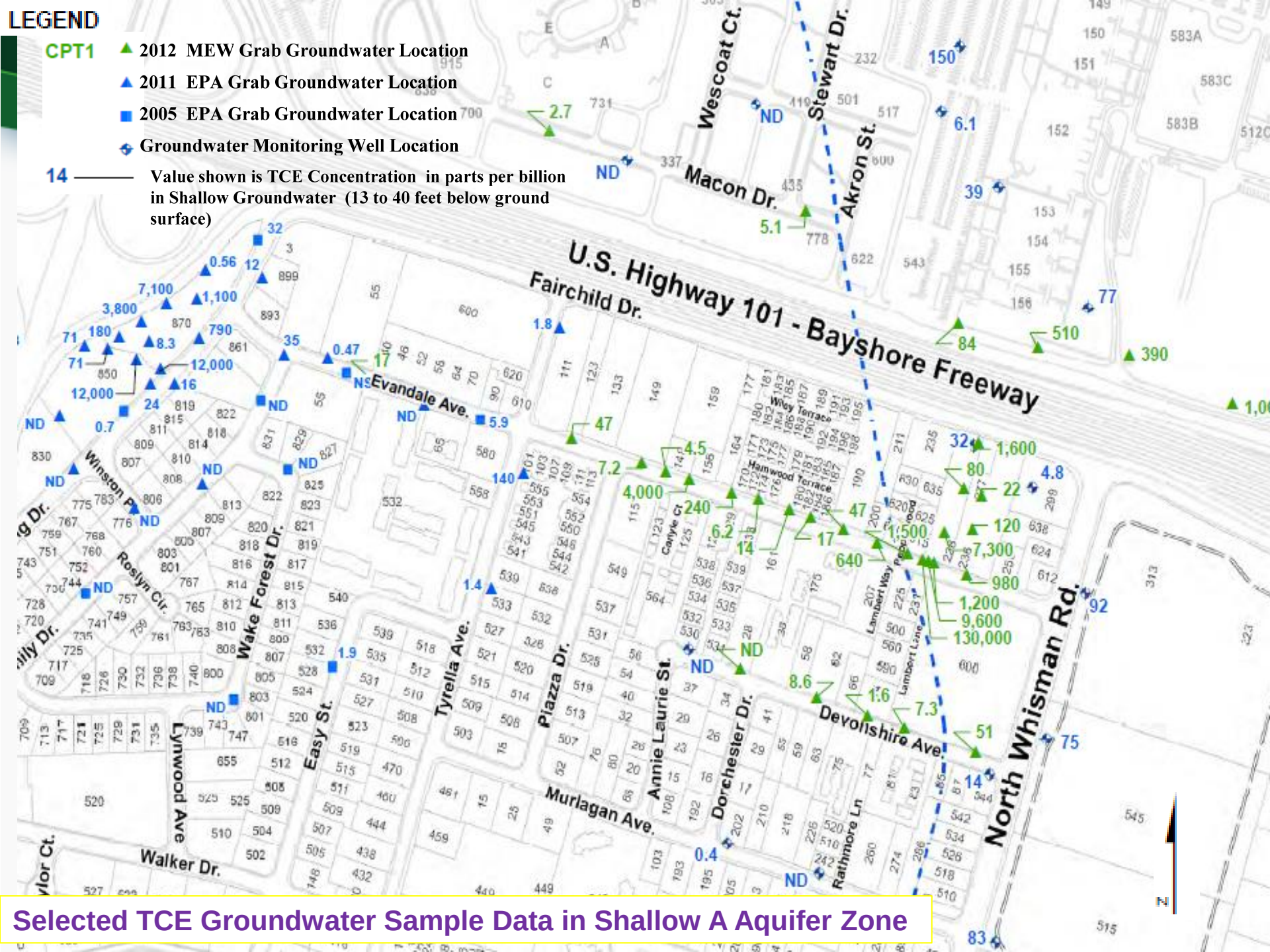
EPA Region

Recent Findings – MEW Regional Groundwater Plume

- Plume margins unchanged in Wescoat Housing Area; majority of housing area still outside the TCE shallow groundwater contamination plume boundary (TCE < 5 parts per billion).
- Plume margins confirmed in the plume areas sampled, with the exception of two “hot spot” areas along Evandale Avenue (south of Highway 101) where high TCE groundwater concentrations were found.

TCE Groundwater Results Along Western Margins of Plume in Shallow Aquifer (0 to 40 feet bgs)

Wescoat Village Housing Area – North of Highway 101 on Moffett Field


LEGEND
CPT1
2012 MEW Grab Groundwater Location
2011 EPA Grab Groundwater Location
2005 EPA Grab Groundwater Location
Groundwater Monitoring Well Location
14
Value shown is TCE Concentration in parts per billion in Shallow Groundwater (13 to 40 feet below ground surface)
U.S. Highway 101 - Bayshore Freeway
Fairchild Dr.
Evandale Ave.
Macon Dr.
Wescoat Ct.
Stewart Dr.
Akron St.
Wiley Terrace
Hamwood Terrace
Lambert Way
Lambert Lane
Devolshire Ave
North Whisman Rd.
Murlagan Ave.
Walker Dr.
Wake Forest Dr.
Winston Pl.
Roslyn Cir.
Easy St.
Tyrella Ave.
Piazza Dr.
Annie Laurie St.
Dorchester Dr.
Rathmore Ln
Lynwood Ave
Selected TCE Groundwater Sample Data in Shallow A Aquifer Zone

MEW Regional Groundwater – Next Steps

- Finalize report summarizing recent groundwater data collected throughout the regional groundwater plume
- Install additional monitoring wells within the MEW/Moffett Field groundwater plume boundary
- Implement groundwater cleanup remedy to address hot spots in the residential area south of 101

Initial Indoor Air Sampling Results

- EPA recently sampled over 60 residences.
- No TCE was detected in most residences sampled.
- TCE was detected in a few residences, but below indoor air cleanup levels. Homes being re-sampled to confirm TCE below indoor air cleanup levels.
- TCE was found in two residences exceeding EPA's TCE indoor air cleanup level.
- One vapor intrusion control system installed; the second one being designed to mitigate TCE indoor air concentrations

Next Steps - Vapor Intrusion

- Results from residential indoor air sampling showed vapor intrusion not a problem in most residences sampled.
- Based on groundwater and air sampling to date, areas that overlie lower TCE groundwater concentrations are considered as low vapor intrusion risk.
- Indoor air sampling continues for buildings overlying the shallow TCE regional groundwater contamination.

How do I have my residence sampled?

Residences within MEW Site Vapor Intrusion Study Area – overlying shallow TCE groundwater contamination exceeding 5 ppb may be sampled

- Contact EPA with your residence address, phone number, and email, and EPA representative will get in touch with you.
- Permission to sample must be obtained from property owner.
- Ground floor units only of multi-unit buildings

EPA Contact Information

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EPA Websites – For More Information

www.epa.gov/region9/mew
www.epa.gov/region9/moffettfield

www.epa.gov/oswer/vaporintrusion